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DEVELOPMENT OF SMALL-SCALE INDUSTRY IN AFRICA

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CHAPTER I

DEFINITION OF SMALL-SCALE INDUSTRIES

1. No universally accepted definition of the term "Small-Scale Industry" exists. While some countries have defined the term, others have not.

2. In Sweden and Germany there is no official definition, but the term "Small Industry" is commonly used to denote industrial establishments having 50 employees or less. In Germany units with even upto 300 are considered small-scale. In Japan there are different criteria for different purposes; but generally speaking, an upper limit in employment of 300 workers and of capital investment upto 10 million yen (US $27,720) are considered as limits for Small-Scale Industries. In USA Small Business is one that is independently owned and operated and which is not dominant in its field of operations. In practice, a limit of employment of 250 workers is used to define Small Business. In India until January 1960 a Small-Scale Industry was defined as a unit with fixed capital investment of not more than Rs.500,000 (about US $100,000) and employment of not more than 50 workers per shift if power is used and not more than 100 workers per shift if power is not used. This was, however, changed and only a capital expenditure of Rs.500,000 is now used as the criterion. This is relaxed upto Rs. 1,000,000 (US $200,000) in respect of small industries working as ancillaries to large industries.

3. Countries in Africa also have no commonly accepted definition. In the UAR a unit with a capital investment of LE 10,000 ($23,000) or total employment of less than 50 workers is considered as small scale. In the "National Income of Sudan in 1961/62" a big enterprise is considered as one with 20 employees or more and a small enterprise as one with less than 20 employees.

of 5 employees and below are deemed small and the others large. Ghana "Area Sample Survey of Small Manufacturing Establishments - 1963" consider as small industrial establishments those with 9 or less persons engaged. The paper on Small Industry in East Africa for the Lusaka Conference of November 1965 took as its criterion units employing upto 100 workers - this is the definition used by the Stanford Research Institute.

4. While a rigid definition may not be strictly necessary for a study of small industries or for deciding on policies for their development, it might be useful to have a definition for administrative and statistical purposes in order to facilitate the compilation of data and a comparative analysis of the development of Small-Scale Industries in various countries of Africa.

5. The Cairo Symposium might consider such a definition. For purposes of this paper units employing upto 100 workers are defined as small industries. While efforts have been made to avoid taking into consideration handicraft units, it has not been possible to do so in a few cases where the statistics do not make a differentiation.

Importance of Small-Scale Industries

6. The importance of small-scale industries in the economies of most countries - industrially advanced as well as under-developed - will be evident from a study of their relative position in the total industrial set up. In Japan, where small industries have played a major role for over a hundred years, small medium-sized enterprises in 1954 in manufacturing alone accounted for 99.7 per cent of the number of establishments (those with less than 30 persons 94.6 per cent, and those with four persons or less 59 per cent). 73.5 per cent of the number of workers and 52 per cent of the value added in that sector - (the total number of enterprises being 527,846 and workers 6,155,722 in all manufacturing establishments).

7. About 90 per cent of the industrial establishments in West Germany had less than 100 employees in 1960. They accounted for 27 per cent of the total employment in industry and contributed 23 per cent of the industrial output.

8. In the United States 271,192 out of a total of 298,182 manufacturing establishments or roughly 90 per cent had less than 100 employees. They employed 4,158,081 persons or 26 per cent of total industrial employment. The value added came to $32,326,681,000 or 26 per cent of the total from all manufacturing establishments.

9. Small-scale industries (other than household units) are estimated in India to have been employing about 8 million people and the factory sector units to have contributed a gross output of about US $5,000 million i.e. about 31.5 per cent of the entire factory sector production

10. Data are not available in respect of all countries in Africa. The following table gives information on a few countries.

	Rhodesia	Kenya	Ghana	Sudan	Tanganyika
	(1)	(2)	(3)	(4)	(5)
No. of industrial units	1046	775	4570	1508	1079
No. of units employing upto 100 (Small Ind.)	865	676	4460	1472	1039
% of (2) to (1)	82	90	97	97	96
Total employment in all mfg. units	82671	49829	50563	19708	21774
Employment in (2)	22598	15447	17678	9008	12812
% of (5) to (4)	27	31	35	46	59
Gross output of all mfg. units	£173,817,000	£74,803,000	£55.6mls	£6,637,326	
Gross output in Small-Scale Industry	£41,353,000	£23,936,960			
% of (8) to (7)	24	32			
Net output of all mfg. units	£65,615,000	£28,580,000			
Net output of small units	£16,908,000	£20.5 mls	£22,451,743		
% of (11) and (10)	25	29			

(1) According to Census of Production 1963.

(2) Figures refer to units with 5 or more employees and are taken from Census of Industrial Production 1963.

(3) Figures refer to employees using power only and are taken from Industrial Census Report 1962.

(4) Figures taken from "National Income of Sudan in 1961/62."

(5) Figures taken from "Employment and Earnings in Tanganyika 1963."

	Rhodesia	Kenya	Ghana	Sudan	Tanganyika
	(1)	(2)	(3)	(4)	(5)
Gross output per worker in all industries	£5885.60	£4202			
Gross output in Small Industries	£5124	£4340			
Net output per worker in all industries	£2220	£1604			
Net output per worker in Small Industries	£2105	£1554			

11. In the case of Ghana the census does not give figures of output etc., for units with below 30 workers. For units which engage 30 - 99 workers the gross output per worker in 1964 was £2094 as against £5124 in Rhodesia.

12. Only the five countries listed above in varying stages of development employed in 8512 small establishments 73,227 workers and contributed 27 to 31 per cent of gross output and 25 to 29 per cent of net output of all manufacturing industries. In the case of less developed African countries, the number of small industries and the percentage of employees and output increase sharply. It can, therefore, be concluded that small industries at the present stage of economic development of most African countries play a significant part, and, in a few, a dominant role.

13. Statistical information regarding output by small industries for all but a few African countries is lacking. The paper on "Policy Aspects of Industrial Development in Africa - Problems and Prospects" for the Cairo Symposium estimates output from manu-

(1) According to Census of Production 1963.
(2) Figures refer to units with 5 or more employees and are taken from Census of Industrial Production 1963.
(3) Figures refer to employees using power only and are taken from Industrial Census Report 1962.
(4) Figures taken from "National Income of Sudan in 1961/62."
(5) Figures taken from "Employment and Earnings in Tanganyika 1963."

facturing industries for the whole of Africa in 1963 of about US $5400 million. Of this about 47 per cent is estimated to be light industry products such as food, clothing, beverages, tobacco, textiles, clothing, footwear, wood products, furniture, paper and paper products. Most of these industries in Africa are in the small sector although there are also large factories. The two countries for which output figures in the small-scale sector are available, viz: Rhodesia and Kenya, show a percentage of 24 and 32 as the share of small-scale production in total output excluding the household units. It is a fact that in the smaller countries this percentage goes up steeply. Assuming an average of 35 per cent, we get a gross output from the small sector of $1800 million per year for the whole of Africa.

14. However, the picture is not uniform and 37.5 per cent of the total output originates from South Africa followed by North Africa which produces nearly 33.4 per cent. East African output is estimated at 12.5 per cent. The lowest is West Africa where it is only 8.7 per cent.

15. Employment figures in small industry for all African countries are not available. The five countries of Rhodesia, Kenya, Ghana, Sudan and Tanganyika alone employ 67,543 in the small sector. It is well known that small industries are working in fair numbers in Nigeria and North African countries particularly UAR. In Libya, for instance, out of a total of about 11,106 in 606 establishments, the number of units having more than 100 workers is only 15; the employment in small industries can be estimated at about 8000. For an assessment of total employment in the small sector we have to rely on estimates, although obviously such estimates will not give an accurate picture.

16. The gross production per worker in small industry in Rhodesia is $5124. In Kenya it is $4340, but this represents industries with 5 or more employees only. If the gross production of units with 1-4 employees is taken, the average gross production per worker will go down considerably. In many of the regions more undeveloped than Kenya, the gross production should be much less. In India the gross average production per worker in the small

industry is $2047 taking the entire small-scale factory sector with 36.457 factories and 1,337,642 workers into account. If we assume this as the average for Africa, on a gross total estimated production of about $1800 million, we get an employment in small industry of about 900,000. This is a broad estimate for which no accuracy is claimed.

17. A sector of manufacturing industry which seems to be giving employment to about 900,000 persons and a gross output of about $1800 million reveals an unsuspectedly large magnitude and deserves close study, encouragement and assistance from governments.

CHAPTER II

ROLE OF SMALL INDUSTRIES IN AFRICAN ECONOMIC DEVELOPMENT

18. Increasing unemployment, especially among school leavers, has been causing concern to several African governments. The annual reports of Labour Departments of many African Governments make reference to this anxiety. Measures for combating unemployment are being attempted. The farm settlement schemes of Nigeria and the youth camps of Guinea are two examples. Small industries offer, among others, one good source of large-scale employment. Gainfully self-employed persons form an economic asset. Where small industries are developed in hundreds of thousands, the employment they give rise to can be of substantial magnitude.

19. In this connection an oriental country like Japan offers an inspiring example. In 1962 Japan employed 4,697,263 workers in 480,217 small enterprises (employing upto 100 workers). The employment in small industries in India is estimated at 8 million. What is possible in these countries may also be possible in Africa. These figures open up a vista of vast possibilities in Africa.

20. For the creation of such vast numbers of jobs the capital cost required is comparatively small in the small sector. According to the Indian census, the total fixed assets of 36,547 small units registered under the Factories Act which employed 1,337,642 workers were Rs.2115.7 million or US $441 ml. This fixed capital works out at Rs.1580 per person employed or $331. This may not be quite applicable to Africa, especially as India itself is manufacturing comparatively inexpensive machinery, but the figure would serve as a good illustration of the fact that with a small capital in African countries it may be quite possible to set up a large number of small industries.

21. Similarly, per given unit of productive capital small industries are found to give a much higher gross output than large ones.

According to the Industrial Census of India, while the ratio of capital to gross output in the case of large industries was 0.82:1 that in the case of small industries was only 0.36:1. Fixed capital gross output and fixed capital net output ratios estimated by a working group on small industries in India are as follows :

	1961	
	Fixed Capital Gross Output	Fixed Capital Net Output
Small-scale units	1: 7.27	1: 1.53
Medium-scale units	1: 4.26	1: 1.01
Large-scale units	1: 1.86	1: 0.54

22. Use of comparatively inexpensive machinery in the workers' own home instead of a specially built expensive factory, absence of other overheads of a capital nature like workers' housing, etc., largely account for this acknowledged fact. Added to this is the technological ingenuity often exercised by the small entrepreneur with lower volume machines in finding alternative ways of performing a task; the skill element makes the small proprietory firm viable.

23. In the context of African countries, with chronic shortage of capital, on the one hand, and insistent demands from several directions, on the other, such as communications, irrigation, transport and education, small industries appear to offer a good solution to the twin problems of a pressing need for higher industrial output and increasing unemployment.

24. It is not necessary in this paper to get involved in a theoretical discussion as to the economies of scale and how they affect small industries. It is, however, pertinent to refer to a study on this subject entitled "Problems of size of Plant in industry in Under-developed Countries" in "Industrialisation and

Productivity 1963". The UN Bureau of Economic Affairs after carefully comparing cost data for the glass container industry for Central America with USA concludes that "a change in technology resulting in a relatively larger input of the less costly labour factor (in under-developed countries) and a corresponding reduction of capital requirements will tend to lower the minimum capacity point".[1] It suggests systematic case studies in a number of industries, selected either because they are specially important to the development of the less developed areas or because they correspond to the particular needs of given regions. "Such studies would certainly show that some industries - especially those which could make more intensive use of the relatively cheap labour resources - could be established in comparatively favourable conditions and would deserve special attention".[2] This has great relevance to the several African countries with limited markets.

25. Large industries in Cement, Steel, Distilling, Sugar and Textiles have developed in some African countries. These are of course essential and much more development has to take place in this sphere. But almost invariably these industries have been established in large part with foreign capital and managed by expatriates. There are exceptions and in Nigeria, it is reported there are a few African "tycoons who own their own companies, sit on the boards of directors of other African or foreign-owned enterprises, and serve as a link between African governments and the modern private sector". But their numbers are strictly limited and efforts of governments and their development corporations are concentrated on attracting foreign capital and foreign entrepreneurs in large industry projects.

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[1] Page 20. Industrialisation & Productivity. Bulletin No.2.

[2] Page 23. Industrialisation & Productivity, Bulletin No.2.

While such effort is undoubtedly necessary for African development, they do not lead to the development of the African entrepreneur - a serious drawback. In this respect small industries have a scoring point. Valuable statistical information in the Industrial Census of Ghana shows that out of 106 large establishments employing more than 100 workers in 30 different types of products, the majority was non-Ghanaian. On the other hand, in 86,809 establishments (including those working with power and without) engaging 208,340 persons in 100 types in the small sector, or 91% were wholly Ghanaian.

26. Their manufacture include food products, textiles, perfumery, cosmetics, bricks and tiles, pottery, nails, aluminium ware, machinery repairs, including automobiles, drums, and printing presses.

27. Similar figures are not available for Nigeria, but it is reported that about 25,000 Nigerians are currently self-employed in small service and manufacturing trades. There is a wide range of service and artisan trades including carpenters, electricians, painters, plumbers, shoe-makers, and proprietors of motor-repair shops; Nigerians own factories making clothing, textiles, matresses, radios and many other manufactured goods mostly in the small sector.

28. The dark side of the picture is that many other African countries have few, if at all, African entrepreneurs even in small-scale industries, the limited current development in which field has been largely monopolised by expatriates, with of course, notable exceptions. For instance, in Senegal, among the few successful entrepreneurs are a printer, furniture maker, a bottler and an iron-monger which goes to prove that in spite of adverse circumstances, potential entrepreneurs exist and can be drawn out. In Liberia private investment is largely concentrated in residential and commercial real estates, transportation and

rubber farming. The exceptions are a few Liberian auto stations and manufacture of doors, window frames and other construction materials. In Kenya the position is worsened by the fact that, unlike Ghana and Nigeria, Africans have not been even in any but petty retail trading. Non-Africans handle more than two thirds of Tanganyika's retail business. Considerable part of Ethiopia's small industry production is due to expatriate enterprise; although there is increasing interest of late on the part of Ethiopians in small industries.

29. The position in many of the erstwhile French Colonies in West Africa is even worse. Even simple items like aluminium hollow-ware, knitting, furniture-making, cement blocks and re-constituted milk are expatriate enterprises.

30. Example of other under-developed countries points that potential entrepreneurs exist in every country and the success of Ghana and Nigeria proves that Africa is no exception. With the rapid expansion of education that is taking place, technical and otherwise, if a proper climate is created, and "discovery" of entrepreneurs and their development is institutionalised, no doubt Africa will throw up in a short space of time thousands of entrepreneurs in a variety of fields hitherto unexplored in the small industry sphere not only in Ghana and Nigeria but in the less developed countries in Africa in the sphere of small-scale industries. Small industries are an excellent primary school in industry often leading to being a stepping stone in the process of evolution of the African entrepreneur to become owner and manager of large enterprises. It should be emphasized that successful small-scale entrepeneurs are an economic asset to every African country.

CHAPTER III

PERSPECTIVE LINES OF DEVELOPMENT

31. Having established that small industries have a useful contribution to make in Africa, it may be useful to explore the possible industries on which effort may be concentrated. It may at once be stated that precise studies on this subject call for feasibility studies country-wise. Small industries, like large, grow and flourish in the context of a wide variety of factors differing from country to country. Generalisations on a continental basis will obviously be difficult and subject to serious errors. In this paper only broad guide lines which may form the back-ground for further detailed study, are indicated. For this purpose we may have to fall back upon experience of countries which, like Africa, have faced problems and successfully developed small industries on a significant scale. Conditions in Africa and these countries cannot of course be identical. Chances of error to some extent can be minimised if instead of one country we take three other countries which under widely varying conditions have achieved success.

32. On the one extreme we have a highly industrialised country like USA, which has developed large industries on a colossal scale but where small industries have also developed on parallel dimensions. We may then take at the other extreme, an oriental country like Japan, which has developed small industries in an overwhelming size and over a wide field, evolving its own pattern of development. In between we have India, a country with problems in many respects similar to Africa, also new to development, where we see small industries in a gigantic process of evolution, consciously encouraged by the Government.

33. We may examine in these three countries which industries have attained in the small sector such a position that they are supplying more than 50 per cent of the gross output of particular

products in the entire economy. Such industries may have a fair chance of success in African conditions, given of course, the other basic factors essential to growth. Appendix I contains three separate lists of such items in the three countries mentioned above. The success of plants in the above three countries does not assure their success in Africa. They can be taken as candidates for detailed investigation on a country-wise pattern. We may now examine the broad techno-economic factors that appear to have been responsible for the development of small industries in these three countries and list such of them as may form perspective lines for Africa.

Consumer Goods

34. Small industries have everywhere been recognised as suited par excellence for the manufacture of simple consumer goods. Development in Africa so far, although without any conscious direction, has been also on this basis. Reference has already been made to how the existing output of about £1800 million consists mostly of consumer goods. Although significant progress has been achieved in this respect, future possibilities are immense not only in countries where development is inadequate but also in countries like Ghana where about 100 types of products are already being produced on Small Scale. In this connection reference may be made to a pamphlet entitled "Choose Your Small Industry" published by Government of India listing more than 600 types of such industries. Imports of manufactured goods form a significant, although gradually declining, proportion of African imports. The following statement may be of interest :

Imports of 1963

Durable consumer goods	$ 546,890,000
Non-durable consumer goods	1,303,443,000
Others	1,191,709,000
Miscellaneous	130,482,000
	$2,172,524,000

35. While many of the products could be manufactured on small industry basis - perhaps that is the only basis possible due to the limited character of countrywise markets - it may be modestly assumed that small industries can hope to capture about a third of the above market with a pro rata addition on account of increase in population and living standards.

36. Particular mention may be made in this connection of agro-industries. Agricultural raw material is the largest available in Africa. The need to develop also largely centres round semi-urban rural areas, so that part of the population at present depending on land could be diverted to industry and the constant trek from the rural areas to the towns in search of gainful employment can be reduced. Agro-industries, therefore, will be the one promising sector in the consumer goods group on which effort has to be focused.

37. Another will be heavy type of products which cannot afford to bear freight charges involved in long distance transport. An example of such an industry is bricks and tiles.

38. The third will be those catering to specialised tastes; apparel for instance, adjusting to rapidly changing fashions; speciality paper catering to small markets; costume jewellery in which change of variety is an essential market demand.

Assembly and Packing Industries

39. Units which assemble components often involve little skills and are best suited for small industries. Such instances are manufacture of footwear, tarpaulins, etc. In India a number of small units started with importing clock movements, and radio mechanism. The outer case alone was locally manufactured. Gradually the units started manufacture of some components, importing or buying from other manufacturers, the rest. Procurement in bulk and packing them for retail trade form the occupation of a number of small industries in India. This extends to cosmetics, pharmaceuticals and vegetable oils.

40. Simple processing is a minor variation of the above and forms the occupation of a number of small industries. In Nigeria, an expatriate medium-sized unit produces cotton knit-wear in bulk; under Government orders this has to be delivered to small Nigerian assemblers for conversion into garments. Polyethylene packing, tissue paper, drinking straw, paper cups and saucers, paper napkins, teleprinter paper, paper tubes, coating of plastics on cloth or paper and metallising are examples of small conversions which appear to hold prospects in Africa.

41. The bicycle and sewing machine industry are a good example of an assembly type of small industry, but in which the components are also made by various small units. It is interesting to note that not only are the products competitive and often cheaper than those made in the large sector, but some of them command export markets, testifying to their quality.

Industrial Services

42. Enamelling, plating, galvanising and polishing of metal products are carried on in a number of small establishments in India. In Japan units with 10 to 49 employees contributed 62 per cent of the value added in electroplating, 68 per cent in metal coating,

73 per cent in heat treatment, 65 per cent in engraving, and 30 per cent in galvanising. The number of units involved is 1590 with 29,787 persons employed.

43. Small Foundries in large numbers supply grey castings for replacements at quite cheap rates to the textile industry in Ahmedabad (India). All these are good examples for Africa. Auto repairing shops have developed in substantial numbers in Africa but their numbers could expand very considerably with increased road mileage and transportation facilities.

Ancillary Industries

44. In Japan between the mid-twenties and mid-thirties when Japanese industries were being put on a war footing the system was developed of sub-contracting. Large industries supplied raw materials to small-scale units who converted them into components. They were assembled, finished and tested and delivered as finished goods by the large sector. Ancillary development has developed considerably in Japan in various industries such as bicycles, sewing machines, automobiles, optical and precision instruments, watches and appliances, textiles and ceramics. The following table gives an idea of the degree of dependence of the big industries on sub-contractors in terms of production costs :

Sewing machines	40 per cent
Ammunition	40 per cent
Bicycles	31 per cent
Gauges	30 per cent
Weaving machines	28 per cent
Automobiles	28 per cent
Optical and precision instruments	26 per cent
Motor cycles	25 per cent
Other industrial machines	21 per cent
Communication apparatus	20 per cent
Watches	19 per cent

Vehicles	18 per cent
Electric motors	17 per cent
Ship building	15 per cent
Electric appliances	11 per cent

45. Assistance given to sub-contractors varies considerably. It extends sometimes to special facilities for equipment to ensure the quality of parts sub-contracted and delivery on schedule. According to a survey carried out of 530 enterprises, as many as 255 received assistance in the shape of raw materials, 144 technical guidance, 140 lease of machinery, 9 interchange of personnel, 70 good offices or guarantee for loans, 37 loans for investment and 26 loans for working capital. It is stated that in June 1956 about 61 per cent of the total number of sub-contractors were receiving aid from the parent enterprises. In 1956 the average number of sub-contractors per parent industry was about 60; 52 per cent of sub-contractors were units which employed less than 30 workers and 80 per cent had capital of less than one million yen ($2767).

46. In the USA again ancillary development has taken place on a significant scale. The degree of sub-contracting varies with the nature and size of each factory. For instance, the International Business Machine Corporation is understood to be procuring 50 to 80 per cent of their components from sub-contracting. About 40 per cent of components purchased by Chrysler Corporation are estimated to be from small units, representing about 20 to 25 per cent of the cost of each automobile. Assistance extended covers not only supply of full technical specifications and blue prints, but also on the spot technical advice by the parent firm engineers, supply of jigs, fixtures, dies and tools and loan of equipment. Quality control is rigidly adhered to and sub-contractors' products not coming up to specifications are promptly rejected.

47. Ancillary development is gradually evolving in India. While machine shops, foundries, tool and pattern markers, repair shops and suppliers of components and spares in the industrialised cities of Bombay and Calcutta have grown in response to market demand, ancillary development on a conscious basis is being fostered by Government The principal attraction in this connection is the extended definition of the term "Small-Scale Industries". The normal definition of a unit with a fixed capital of Rs.500,000 is liberalised in the case of ancillaries to Rs. one million for eligibility to supply of machines on hire purchase basis from the National Small Industries Corporation.

48. The policy of active encouragement has led not only to the establishment of sizeable number of ancillaries, but even of ancillary industrial estates attached to large units both in public and private sectors. Particular mention may be made of such an estate attached to the Government's machine tool factory in Bangalore. Ancillaries are developing in respect of the following public sector projects :

Hindustan Machine Tools, Bangalore
Heavy Electricals, Bhopal
Heavy Engineering Corporation, Ranchi
Hindustan Antibiotics, Poona and Rishikesh
Hindustan Aircrafts, Bangalore
Bharat Electronics, Bangalore
Radio Electric Manufacturing, Bangalore
Indian Railways - particularly Diesel Locomotive Factory, Varanesi
New Government Electric Factory
Iron and Steel Works, Bhadravati
Hindustan Steel, Bhilai and Durgapur

49. On the threshold of industrial development, Africa is also considering establishment of heavy industries. It is understood that proposals include projects for machine tools, heavy electrical equipment, aircraft, railway equipment and steel. It may be desirable to consider the establishment of ancillaries right at the stage of formulation of detailed proposals, and the infrastructure required.

50. Industrial licensing procedures and Government purchase programmes could be utilised as effective instruments for ancillary development. Development of ancillaries under African entrepreneurship can be made a condition precedent to the granting of licences for large units. Import licensing can also be effectively used for this purpose. USA has been, it is understood, using Government purchase policies in favour of ancillary development.

51. Africa is developing, among others, engineering colleges and technical institutes. Ancillary development programmes could be particularly adapted to the technicians coming out of such institutions.

52. Another possibility open in Africa that may not be strictly called ancillary development is for small industries producing items required by large units. Manufacture of cloth bags for the big roller flour mill in Nigeria, nuts and bolts for the aluminium corrugated sheet unit in Accra, shoe laces for the canvas shoe factory in Addis Ababa are a few of hundreds of examples. The railway systems in Africa are importing most of their spares and components, many of which could be made in small industry. Effort in painstakingly listing the thousands of requirements of private and public sector large enterprises, drawing up standard specifications, prominent exhibition of samples with information as to total requirements every year, followed up by active assistance to entrepreneurs, technical and otherwise, would be well rewarded

not only by visible development of a multitude of small-scale units but also by a drastic saving of scarce foreign exchange which could be put to import of capital goods.

Modernisation of Traditional Manufacture

53. As pointed out earlier, Ghana has as many as 90,797 establishments working without power. Libya has 7,332 establishments with less than 5 employees each and engaging 16,012 persons. More or less the same position obtains in other African countries. The UN Publication "Industrial Growth in Africa" estimates that nearly half the present manufacturing output originates in small industries. Most of the establishments are dispersed over the entire country. With the rapid spread of electrification, many of these units which are performing essential services to the community could be mechanised and those which are working with power but on a very small scale could be expanded. Power looms in place of handlooms, power hammer for the blacksmiths and band-saws and mechanised equipment for the rural carpenters, presses for the sheet metal workers, small power expellers to replace the hand pressing of oil are but a few of the vast possibilities in most African countries. The experience of mobile vans spreading the idea of mechanisation in the Indian countryside has been entirely satisfactory and can be adopted in Africa. If a country-wise dynamic programme is set in motion, the resulting advantages in addition to output and employment in the shortrun and the spread of mechanical mindedness over the country-side in the long run, finding concrete expression in myriads of workshops are bound to be considerable.

CHAPTER IV

ACTION FOR DEVELOPMENT

54. The foregoing would disclose that the future of small industries in Africa under African entrepreneurs is bright. Development would, however, be impossible unless governments forcefully realise the importance of small industries - at present there is not enough evidence to this effect - and create the necessary climate, infra-structure and facilities. A firm declaration of policy in favour of small industry development by African entrepreneurs within the overall plan for industrial development by African governments would not only remove ambiguities but be guidelines for all departmental thinking and action. Such declaration would be of great assistance in what is more or less a neglected field today. In certain African countries there is doubt as to whether the African entrepreneur in the field of small industries is to be encouraged or not and declarations of policy should remove all such doubts.

55. Most African governments have formulated investment codes offering incentives for establishment of industries. Some of these codes draw the line at a particular limit of capital; units with investments below are barred from the benefit of the incentives. Large industries being more or less the exclusive field for expatriates, the effect of such exclusion is to shut out indigenous small industry enterprise - already rare. The removal of such discrimination is strongly recommended.

56. One chief obstacle to indigenous industrial development is import from industrially-advanced nations at rates local industries find at any rate in the initial stages difficult to compete. Bulk production aided by extensive export subsidies are behind such low rates, which sometimes are tantamount to dumping. It is the policy of protection, extending often to wholesale bans on

imports, which have led to rapid development of industries, large and small, in Japan and India.

57. To prevent fall in quality consequent on elimination of competition, standards could be prescribed and enforced. Positive help to small units in producing quality goods could be given by the Small Industry Centres, which are recommended for establishment.

58. Most African markets are limited; and in many cases may not support any large industries unless on a sub-regional basis. In such a contingency exclusive reservation of certain spheres for small industries as in India may not be necessary; but government purchase policy may be adjusted to benefit small industries. The quantum of subsidy involved is small; the psychological boost to small industry is substantial. The purchase policy in USA has been used as an effective tool for encouragement of small business. The policy involves government purchases in certain items exclusively from small industries and a price preference in regard to others.

59. Development Corporations or Development Banks have been started by almost all African countries. The former not only grant loans but also participate in equity of industrial concerns; whereas the activities of the banks are restricted mostly to medium and long-term loans. There is considerable amount of divergence in regard to the working of these organisations in the various countries. In the absence of figures of loans disbursed by them to large and small industries it may be hazardous to make a statement, but the impression one gets after discussion with a number of such concerns is that their activities by and large centre round large industries and (although there are exceptions) particularly those involving foreign capital. Some Banks have fixed lower limits of £10,000 to their loans which naturally exclude many small-scale units. Others rule out loans for initial

starting of an industrial unit, but give only after its successful operation for about two years. Invariably they insist on sound security which may extend to twice the value of the loan.

60. On the whole funds do not appear to be the limiting factor but projects. While some Development Banks have organised investment promotion divisions which prepare projects and look round for entrepreneurs, the same could not be said of all Banks. But almost all of them have no technical officers on their staff and the lack of any other organisation with technical staff acts as an obstacle both in evaluation of projects as well as in preparing feasibility studies. One Bank has employed foreign consultants but most of its projects are tilted in favour of large units, involving imported capital, know-how and enterprise.

61. On the whole, no new organisation seems called for in regard to grant of loans. The pressing need appears to be to prepare a large number of sound feasibility studies and interest African entrepreneurs.

62. Money loans of course are essential, but a good variation consists of supply of machines to small industries on hire purchase basis. Hire purchase supply is not unknown in items like sewing machines and motor cars, but the arrangement proposed above of machines covers much vaster dimensions and is motivated not by private profit but of service. Supply of machines instead of cash loans eliminates chances of misuse. Above all, the over riding superiority of this scheme is that it calls for no guarantees or collaterals; the machine remains legally the property of the advancing corporation until the last instalment with interest is paid. The small entrepreneur instead of having to find mortgageable properties to the extent of twice the loan has only to find about twenty per cent as initial payment; the rest is recovered over 4 to 8 years depending on the life of the machine.

63. In India, the one country which has been working the system through a wholly government-owned corporation, the supply of machinery on hire purchase has been very successful. Incorporated early in 1955, the Corporation has a paid up capital of Rs. 5 million (about £1.25 million) which is augmented by rupee loans from the Government of India and foreign currency loans from international organisations. From the inception of the scheme upto 31st March 1965, the Corporation delivered 14,326 machines to 4775 small units of an approximate value of Rs.216.3 million (US $43.5 million). The machines supplied ranged from simple ones for making wire nails to complete plants for collapsible tubes, flexible pipes, paper, high precision machine tools, etc. Defaults were few; the organisation worked fully on commercial lines charging interest of 6 per cent and a service charge of 6%.

64. Such a scheme appears to be strongly called for in the present conditions of Africa with too few entrepreneurs faced by formidable barriers in the form of sound securities and the Banking institutions always cautious in their approach, made more apprehensive by too many failures.

65. Whether the existing development banks or corporations can with their present constitutions embark on hire purchase supply of machines is not by any means a difficult question. If their Memorandum and Articles or Charter do not allow, a subsidiary could be easily formed.

66. Obviously it will be unwise to develop new overhead expenditure on this activity until the system becomes fully established and justifies such expenditure on economic grounds. In the long run this system has a beneficial effect to indigenous capital goods industries, there will be a ready-made organisation to market a considerable portion of their products. There is nothing to indicate that small industries are not getting adequate working capital. But this difficulty is bound to arise with the

increase in numbers of entrepreneurs, many of them might not be "credit-worthy". In some African countries such a situation has already arisen.

67. Government guarantee of credits to small industries by commercial banks has been in force in Japan. Under the Loss Compensation system, the Government or local public bodies undertake to compensate upto a certain limit, the losses that might be incurred by financial institutions in giving loans to small and medium businesses. The compensations vary from 50 to 90 per cent with different kinds of loans Under the Credit Guarantee Society Law of 1953, 52 Societies have been established in Japan. The functions of such societies include standing guarantee for a small or medium industry when it is given a loan by a financial institution.

68. A credit guarantee scheme in favour of small industries was introduced in India since July 1960 under which financial institutions advancing short-term or long-term loans to small units will be able to recoup part of the loss, if any, from the Reserve Bank of India. This scheme has given incentives to Commercial Banks to advance loans to small industries. The number of guarantees issued stood at 11,067 in September 1964, the amounts guaranteed totalled Rs. 427 million (US $85 million).

69. It is necessary that African governments examine and adopt similar schemes to remove what may become the one major obstacle to small industries achieving their set targets

Industrial Estates

70 What the hire purchase scheme does by way of relief in the initial capital expenditure in purchase of plant, the industrial estate does in regard to the capital expenditure on buildings - providing built-up factory space with power, water supply, drainage, common facilities, etc., at economic and often subsidised

rents - the industrial estate has in other countries established itself as an excellent tool for small industry development. Encompassing within a small area a diversity of active small industries, the industrial estate serves as a visible example for entrepreneurs in neighbouring areas and thus radiates knowledge leading to development in adjacent places. In India the industrial estate concept has shown phenomenal development and in ten years more than 300 estates have not only come into existence but are flourishing.

71. The industrial estate idea is not exactly new to Africa; but barring the small pilot estate in Yaba (Lagos) no industrial estate appears to have been constructed nor does there appear to be any proposal for such construction barring Mauritius which is planning one near Port Louis. But "industrial areas" have been developed by most African countries providing developed factory sites - such areas exist in Nairobi, South Africa, Rhodesia, Dar-es-Salaam, Morogoro, Mwanza, Arusha, Moshi and Tanga (Tanganyika), Angola, Chad (where plots in the industrial area are reported to be given free). In Nigeria industrial areas have been completed in Kaduna, Kano, Zaria and Jos. The Trans-Amadi "Industrial Estate" in Port Harcourt, Emene near Enugu, Onitshe, and Abe in Eastern Nigeria are in various stages of development. Ikeja, Mushin, Ajeromi, Ibadan, Abeakuta, Oshogbe, Akure and Ijeba-Ode in Western Nigeria are examples of industrial areas either completed or being developed.

72. These industrial areas are not specifically earmarked for small industries, but for all - although as a matter of fact some areas like Ikeja and Apapa are all occupied by large industries only. It, therefore, comes to this that except Yaba there is no industrial estate according to the UN concept of the term which provides built-up factory space exclusively for small industries.

73. Situated on a 2¾ acre plot of land in Lagos, with 42 standard factory units, the Yaba Estate is reported to be occupied by 28 tenants with a total employment of 300 workers. The units include light industries manufacturing garments, scientific equipment, furniture and plastics. Factories are allotted on rents, which for the first five years are subsidised. The general services include power, water, watch and ward, fire protection, canteen, parking space, lavatories, and telephone services. A common facility workshop with a number of machine tools is maintained. Training is also arranged in the workshops to the managers of industrial enterprises.

74. The industrial estate as an isolated infra-structure is not likely to be effective; it has to be one among a number of other instruments for small industry development such as facilities for supply of hire purchase machines, technical assistance from small industry service institutes (as will be suggested later), easy credit facilities and preferential policy in the matter of government purchases.

75. If African governments take steps to implement these policies, the construction of industrial estates would be a major step that could be strongly recommended.

76. Such estates would best be located in the industrial areas already developed, in the vicinity of large industries. This would lead to much mutual dependence and make for the success of the estate. At the same time it would also lead to considerable economies in the matter of services such as electricity, water, and sewage. Such a course would also ensure speed in construction of the estates avoiding as it does the time consuming procedures of land acquisitions.

77. Construction of factory space in industrial estates may be planned after careful surveys and ensuring that it will be taken

up once it is constructed. This pre-supposes considerable consultation with the existing and potential small industrialists.

78. In India construction of industrial estates has been undertaken so far solely with loans provided by the Central Government to the Provincial Governments. Such loans are repayable over a period of twenty years and carry low rate of interest. It has been recognised that the small industrialist would not find it possible to pay the economic rents in the first five years of his venture and as such, provision has been made of subsidies on a graduated tapering basis by the Central to Provincial Governments. In addition some estates have offered exemption from local taxes in respect of materials coming into and moving out of the estate.

79. The industrial estate idea has become so popular in India that the need for Government funds for their construction is fast disappearing. Co-operative industrial estates are springing up with funds from institutional sources. The Life Insurance Corporation of India in the public sector and a few important insurance companies in private sector have also stepped in to provide loans for construction of estates on easy terms.

80. These are pointers to Africa. In the early stages it may be necessary for governments to find all the funds for construction, rents may have to be subsidised, tax relief may have to be given; but in a short period of time, such extraneous props may hardly be necessary and the popularity of the estates themselves and their benefit to small industry would become so well established that Co-operatives and other organisations may step in for their construction and expansion.

81. The extent of usefulness of an estate will depend not merely on the rents; but also on the service facilities it provides. It is desirable to provide a well-equipped common

facility workshop with machines that the small entrepreneur may find too expensive to procure himself. It is best to locate the small industries service institute in the estate so that the units could take advantage of the technical services of the Institute, and of its library, could participate in seminars and training schemes. In other words the Institute and industry can maintain intimate contact. It may also be useful to locate technical institutions in the estate which will provide a practical background. Labour housing schemes, if any, may also be sited near the estate. As far as possible, the estate may be near the towns so that the managers and labour do not have to travel too far to their place of work.

Technical Assistance

82. As mentioned earlier, the development of small industries in Africa is by no means insignificant - to make these units more efficient and to mechanise the traditional industries will involve technical assistance. A more important need in Africa is the drawing out of the entrepreneur into the small industry field. Economic surveys, identification of possible fields for development and preparation of feasibility studies are an essential preliminary.

83. These functions are best achieved by what is called the Small Industries Service Institute or Centre. In Africa such centres do not exist, but a good beginning has been made in Owerri in Eastern Nigeria where with the assistance of US AII, the Dutch Government, the Ford Foundation, the ILO, and the Regional Government, an Industrial Development Centre has started functioning recently and carrying out most of the functions abovementioned on a comprehensive basis.

84. It is understood that the IDC contacted in 1965 more than 600 entrepreneurs. Of these 300 were selected for special assistance in IDC seminars and approximately 75 of this group are

reported to have made significant progress towards installing or perfecting workshops with new equipment and new production and marketing procedures. It is also stated that an additional 70 new enterprises are currently under development. The IDC is equipped with workshops for wood working, metal fabrication, auto repairs, leather working and textiles. It is understood that in U.A.R. and Morocco, such institutes are being established with funds from U.N. Special Fund, and ILO as executing agency.

85. The local government has provided the buildings, housing and furniture for personnel, maintenance of all buildings, grounds and equipment, materials for operating the programme, Nigerian counterpart personnel and transportation and per diem for Nigerian and other (except USAID) personnel. USAID provides equipment for all workshops, transportation and per diem for USAID personnel.

86. In India "technical assistance" is regarded as the most important item in the programme for the development of small industries. 16 small industries service institutes, 5 branch institutes and 64 extension centres with a staff of more than 650 technical staff members and approximately an equal number of workshop employees, rendered technical assistance of diverse kinds to 52,896 cases, in 1963-64. Advice to start new industries was given in 24,995 cases; one of the important items of work done by this organisation, which has a great deal of relevance to Africa, is the preparation of feasibility studies for a diversity of small industries. Nearly 1100 such reports have been prepared. Many of them are printed and widely distributed free of cost. The studies disclose the capital cost, machines required, turnover and profitability. Appendix II gives a list of such studies in India which prima facie appear to have relevance to Africa. The figures are based on Indian conditions. To work out corresponding figures for the various countries in Africa would involve considerable time and effort. The list may

be taken purely as illustrative of what can be done. Preparation of such feasibility studies on a country-wide basis in respect of the small industries which appear prima facie to hold possibilities for development and wide dissemination of such studies may go a long way to attract entrepreneurs.

87. The extension centres in specific industries give intensive training in items like thermometers, scientific glassware, lens grinding, machine tools, electric motors, agricultural implements, etc.

88. The institutes vary in size and staffing in accordance with the requirements and potentialities of the various areas. The recurring expenditure over each institute ranges from Rs.600,000 (£ 120,000) to about (£ 240,000) per year.

89. Once the institute is established together with hire purchase organisation, intensive campaigns can be organised. A team consisting of technical officers of the institute and of the hire purchase organisation goes to a semi-urban area which has the necessary infra-structure within their mobile vans, films of small industries and products that could be made, with printed copies of feasibility reports of industries possible in this area. Active personal contact is established with potential entrepreneurs, alternative schemes are discussed, wherever an entrepreneur shows interest in a particular project, the hire purchase application form is filled up then and there. Active follow-up is made of such cases. The result will be favourable even though it may happen that only 10 out of 100 entrepreneurs proceed beyond the stage of discussion. In Africa, such intensive campaigns are essential and may bear fruit, if not at once, gradually. Every sizeable African country which desires to initiate a small industry programme may establish at least one small industry institute. Its size and composition may depend upon the size of its small industry sector, resources available and targets for development.

90. The functions of the institute may be :

1. Advice to small units on improved technical processes and use of modern machinery;

2. Conduct of training classes in a variety of technical subjects including business management;

3. Technical assistance in development of ancillary industries;

4. Conduct of economic surveys in particular industries and areas;

5 Drawing up of feasibility studies in a large variety of industries;

6. Contacting entrepreneurs, and persuading them to take up small industries and for this purpose to undertake intensive campaigns;

7. Take up and implement quality control schemes.

CHAPTER V

TARGETS

91. If the government were to implement the above proposals actively and create the necessary climate, rapid development of small industries can be expected in many African countries. It might be a useful idea for each government to lay down a target for development within a particular period and to set about achieving it. Most of the development plans contain targets for the industrial sector but they have not been broken up into separate targets for small-scale sector and otherwise. It is estimated that the gross output from small industries in Africa is about £ 1800 million of employment about 900,000.

92. Excluding the highly-industrialised South Africa, the output from the rest may come to only £ 1125 million and employment 562,000. Doubling the present output and employment within five years, if possible, and definitely within ten years may be a target worth trying for.

93. This may mean a total investment of about £ 225 to £ 300 million. Part of this will come from the entrepreneurs - perhaps 30 per cent may be a rough estimate while the remaining £ 157 million may have to be found by governments. The extra working capital required of about £ 280 million may have to come from Commercial Banks.

Summary of Major Conclusions and Recommendations

1. Small industries play a significant part in the life of most African countries and in a few, a dominant role.

2. The gross output from the small industries sector in Africa may be roughly estimated at £ 1800 million and employment about 900,000.

3. While large industries are mostly started by expatriate enterprise, small industries can mostly be owned and operated by African entrepreneurs and can also often form the stepping stone for African entrepreneurs into large industry.

4. Small industries, according to the experience of other countries, produce per given unit of capital greater output and employment than medium and large units. Small industries appear to offer a good solution to African countries in the context of shortage of capital and the need for employment.

5. Industries listed in Appendix I & II may be taken as candidates for detailed investigation on a country-wide basis.

6 Consumer goods, assembly and packing industries, industries performing industrial services and ancillary industries have good scope in the small sector. Modernisation of traditional industries is another direction for development of small industries.

7. Policy declarations by African governments in favour of development of small industries with African entrepreneurs would be helpful.

8. Discriminatory regulations which go against small industry development may be removed.

9. Protection at least in the first few years is essential for small industry development.

10. Government purchase policies may be adjusted to help the small sector.

11. Feasible projects and not money appear to be the principal handicap to small industry development in Africa.

12. Development Banks or Corporations may take up by themselves or through subsidiaries the supply of machines to small industries on hire purchase basis.

13. A system of guarantee by governments against possible losses by commercial banks may be essential for rapid development of small industries.

14. With other instruments like the system of supply of machines on hire purchase basis, technical assistance, preference in government purchases, etc., industrial estates may be an effective tool for small industry development in Africa.

15. Industrial Estates may preferably be located in the industrial areas.

16. In the initial stages the entire funds for construction of the estates may have to come from governments.

17. Each sizeable African country which wants to initiate a small industry development programme should have a small industry service institute.

18. Intensive campaigns to draw out and persuade entrepreneurs to take up small industries will be considerably beneficial.

19. A target of doubling the present output and employment in about 5 years if possible and definitely in 10 years may be a target worth attempting.

20. It would be desirable to attempt a definition of the term "Small Scale Industry" in Africa.

APPENDIX I

LIST OF INDUSTRIES IN WHICH SMALL PLANTS ACCOUNT FOR MORE THAN HALF THE OUTPUT

I N D I A

1. Separable and Specialized tasks -

Iron and steel castings and forgings
Cutlery, locks, etc.
Hurricane lanterns
Sanitary and plumbing fixtures and fittings
Weights, metal fittings, domestic utensils, welding electrodes, other metal products.
Household electric appliances (heaters, irons, etc.)
Surgical instruments
Scientific instruments
Buttons
Plastic molded goods

2. Simple Assembly, Mixing or Finishing Operations

Cocoa, chocolate, confectionery products
Textile dyeing, bleaching, finishing
Knitting mills
Cordage, rope, twine
Gas mantles
Tarpaulins, tents, sail, other canvas goods
Footwear, except rubber
Clothing
Umbrella
Leather products, except footwear and apparel
Explosives, including gunpowder and safety fuses
Insecticides, weedicides, fungicides
Soaps and glycerine
Perfumes, cosmetics, other toilet preparations.

Pencil and pen
Brooms and brushes
Games and Sports goods
Toys

3. Service Industries -

Printing, publishing, allied industries
Enamelling, japaning, lacquering, galvanising, plating, polishing.
Type founding
Welding
Repair of motor vehicles
Wrapping, packing and filling of articles

4. Plants serving local markets -

Soft drinks and carbonated water
Wooden and cane containers and small ware
Joinery and general wood-working
Wooden furniture
Paper for packaging
Fertilizer mixing
Bricks
Tiles
Hume pipes and other concrete products (including reinforced products)
Metal container and steel trunks
Agricultural implements
Boat building

5. Processors of dispersed resources

Canning and preservation of fruits and vegetables
Canning and preservation of fish and other seafoods
Flour mills
Rice Mills

Dal Mills
Gur
Edible oils, except hydrogenated
Tea manufacture
Coffee curing works
Saw milling
Tanneries and leather finishing
Vegetable and animal oils and fats (except edible oils)
Stone dressing and crushing

6. Products with small or segmented markets
Chemical machinery
Construction machinery
Oil mill machinery
Rice, dal, and flour mill machinery
Size reduction equipment
Conveying equipment
Mixers and reactors
Refrigeration plants for industrial use
Fire-fighting equipment and apparatus
Earth-moving equipment (scrapers, rollers, dumpers, shovels, etc.)
Weighing machines
Photographic and optical goods
Watches and clocks

7. Craft or precision hand work -

Carpet weaving
Coir manufacture
Glass hollow ware
Glass laboratory ware
Misc. glassware, including optical glass
Mica factories
Jewellery
Bone, ivory, horn and similar articles
Slates and slate pencils.

J A P A N

FOOD PRODUCTS

1. Less than 50 employees :

Vegetable and fruit canning sauces
Vinegar
Rice polishing
Potato processing
Animal feed
Soft drinks
Crackers
Pastry
Noodles
Winery
Beer
Sake
Tea
Ice

2. Less than 100 employees :

Meat packaging
Dairy products
Soy sauce
Spirits
Confectionery

TEXTILES

1. Less than 50 employees

Silk weaving
Special textiles
Cotton knit underwear
Socks

Cotton gloves
Yarn dyeing
Handloom cloth dyeing
Fibre for nets
Waterproof cotton cloth
Lace
Cord
Hairnets
Fine cloth
Felt

2. Less than 100 employees :

Woollen knitwear
Carpet and mats
Sanitary materials

APPAREL

1. Less than 50 employees :

Men's clothing
Women's and children's clothing
Working clothes
Underwear
Panama hats
Cotton hats
Furs
Japanese clothing
Neckties
Scarfs
Handkerchiefs

2. Less than 100 employees :

School uniforms

WOOD AND WOOD PRODUCTS

Less than 50 employees :

Saw milling
Wooden buckets

FURNITURE AND FIXTURES

Less than 50 employees :

Furniture

PULP AND PAPER PRODUCTS

1. Less than 50 employees :

Paper products
Household wrapping paper
Paper boxes
Fibre boxes
Cellophane

2. Less than 100 employees :

Large paper bags
Cardboard boxes

PRINTING AND PUBLISHING

Less than 50 employees :

Duplicating
Book printing
Book binding
Printing goods
Job printing
Photo-offset

Typesetting
Lithography
Other printing services

CHEMICALS AND CHEMICAL PRODUCTS

1. Less than 50 employees :

Lanolin
Cosmetics
Candles
Tanning oil
Wax products
Natural perfumes
Grease
Non-petroleum grease and oil waste oil
Asphalt

2. Less than 100 employees :

Printing ink
Glue
Coal briquette

RUBBER GOODS

Less than 50 employees :

Reclaimed rubber
Waste rubber
Recapped tires

LEATHER AND LEATHER GOODS

1. Less than 50 employees :

Leather goods
Leather bags
Harnesses

2. Less than 100 employees :

Tanneries
Industrial leather except gloves

STONE, CLAY AND GLASS PRODUCTS

1. Less than 50 employees :

Flat glass
Optical glass
Glass goods
Stone goods
Bricks
Clay pipe
Industrial ceramics
Concrete products
Artificial jewellery

2. Less than 100 employees :

Pharmaceutical glass
Flasks
Ornamental ceramics
Asbestos

PRIMARY METALS

1. Less than 50 employees :

Re-rolled steel products
Drawing steel bars and shapes
Primary refineries (titanium, nickel)
Secondary refineries (lead, zinc, aluminium)
Non-ferrous foundries

2. Less than 100 employees :

Seamless steel pipes and tubes
Primary refineries (copper)
Rolling and drawing of lead

FABRICATED METAL PRODUCTS

1. Less than 50 employees :

Western cutlery
Handtools
Work tools
Hand saws and blades
Agricultural tools
Stamped and pressed metal products
Coating metal products
Engraving on metal
Nails
Nuts and bolts
Safes

2. Less than 100 employees :

Knives for machinery
Cutlery and artisans tools
Files
Radiator pipes
Construction and ornamental metal
Galvanizing
Steel springs
Metal tubes

MACHINERY, EXCEPT ELECTRICAL

1. Less than 50 employees :

Special industrial machinery
Food products machinery
Printing and binding machinery

2. Less than 100 employees :

Construction machinery
Metal-working machines except machine tools, metal machine tools and accessories
Dyeing machinery
Wood products machinery
Pulp and paper machinery
Pumps
Refrigeration equipment
Fire extinguishers

ELECTRICAL MACHINERY

Less than 100 employees :

Wiring devices and supplies

TRANSPORT EQUIPMENT

Less than 100 employees :

Bicycles
Rickshaws and parts
Wooden boat building and repair

INSTRUMENTS

1. Less than 50 employees :

Medical instruments and accessories
Surgical and orthopedic appliances and supplies

Physical and chemical apparatus and instruments
Optical glasses

2. Less than 100 employees :

Microscope
Telescope
Lenses for optical apparatus

MISCELLANEOUS

1. Less than 50 employees :

Sports goods
Buttons and ornaments

2 Less than 100 employees :

Jewellery musical instruments
Pens
Pencils

UNITED STATES

Less than 50 employees :

Meat packing
Prepared meats
Poultry dressing plants
Creamery butter
Natural cheese
Bottled and canned soft drinks
Animal oils, nec.
Processed textile waste
Men's dress shirts and nightwears
Millinery
Fur goods
Apparel belts
Canvas products
Schiffli machine stitching
Logging camps and contractors
Wirebound boxes and crates
Typesetting
Photo-engraving
Industrial gases
Surface active agents
Putty and caulking compounds
Fertilizers, mixing only
Paving mixtures and blocks
Concrete block and brick
Concrete products
Ready-mixed concrete
Cut stone and stone products
Minerals : ground or heated
Screw machine products
Plating and polishing

Metal coating, engraving, etc.
Construction machinery
Special dyes and tools
Industrial patterns
Machine shops
Storage batteries
Lapidary work
Marking devices
Artificial flowers
Lamp shades
Signs and advertising displays

2. Less than 100 employees :

Partitions and office fixtures
Ice-cream and frozen desserts
Fresh and frozen packaged fish
Prepared animal feeds
Rice milling
Flavourings
Cotton seed oil mills
Padding and upholstery filling
Women's blouses
Women's dresses
Women's suits, coats and skirts
Children's dresses
Children's coats
Robes and dressing gowns
Leather and sheeplined clothing
Curtains and draperies
Sawmills and planing mills
Millwork plants
Prefabricated wood products
Nailed wooden boxes and shook
Veneer and plywood containers

Mattresses and bedsprings
Set-up paperboard boxes
Bookbinding and related work
Electrotyping and stereotyping
Polishes and sanitation goods
Agricultural pesticides
Agricultural chemicals, nec.
Glue and gelatin
Printing ink
Lubricating oils and greases
Footwear cut stock
Leather gloves
Handbags and purses
Brick and structural tile
Pottery products, n.e.s.
Primary lead
Brass, bronze, copper castings
Sheet metal work
Conveyors
Industrial vacuum cleaners
Boat building and repairing
Jewellery precious metal
Jewellers findings and materials
Dolls
Buttons
Candles
Umbrellas, parasols, and canes.

All the above information is taken from the Report of the International Perspective Team 1963, Government of India.

SCHEMES FROM INDIA

INDUSTRIES BASED ON AGRICULTURE

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$	No. of Workers	Annual Production	Remarks
1.	2.	3.	4.	5.	6.	7.	8.	9.
1.	Cashew-Apple wine and other fruit wines	225,000 bottles per year	12,180	10,990	23,170	17	225,000 bottles valued at about $82,690	Rented Building
2.	Cashew apple products		2,415	4,305	6,720	6	5000 tins(6 lbs) of candy, 8000 bottles (1 lb.) 8000 bottles (1½ lbs.)value $ 15,645 14,000 bottles (1½ lbs) juice, 14,000 (1½ lbs) syrup - all valued at $15,645	Factory on rent
3.	Cattle feed	4000 pounds per day	18,900	23,533	42,433	23	1,248,000 lbs. of animal feed worth $52,416	Composition of mixture Tapioca..21 part Ground nut cake - 24 parts coconut cakes 10 parts Rice bran 30 parts Tamarind seed 10 parts salt 2 parts Bone meal-2" Own Building

1.	2.	3.	4.	5.	6.	7.	8.	9.
4.	Coconut shell flour		4,62[illegible]	4,78[illegible]	9,408	23	£18,900 worth	Rented Building
5.	Amylcinnamic Aldehyde and Undecalactone from Castor Oil	5000 lbs.per month of ACA and 500 lbs.of U. per month	18,524	30,733	49,257	21	60,000 lbs.of amyl cinnamic aldehyde valued at £113,400 and 6000 lbs.of undecalactone valued at £50,400.	.do.
6.	Soft Biscuits	54 tons per year	2,060	6,340	8,400	11	54 tons per year at £28,350	.do.
7.	Ground nut decorticator	28 tons per day per shift	4,200					.do. on job basis
8.	Oil milling	Approx.1 Ton per 8 hour	2,100			5		Rented building
9.	Sago	12½ tons per month	1,890	5,113	7,003	19	£23,625	Rented building
10.	Brown sugar	15 tons per day crushing	17,367	1,533	18,890	8	23,278	.do.
11.	Citral or geraniol from lemon grass oil (Essential oil)		10,290	19,740	30,030	8	13,200 kg. citrol 3000 kg terpenes all valued @ £100,800	.do.

INDUSTRIES BASED ON ANIMAL RESOURCES

No.	Scheme	Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1.	Bone meal	3000 lbs. of raw dry bones per day for 25 working days per month	3,360	5,040	8,400	15	317 tons of bone meal valued at $ 14,636	Own Building
2.	Fish meal		39,370				1500 tons per year	Rented building
3.	Flaying & Carcass utilization		3,150	2,100	5,250	6	$ 5,128	Own Building
4.	Glace kid		42,630	43,779	86,409	48	$200,917	.do.
5.	Chamois leather	100 skins per day	4,200	5,596	9,796	6	120,000 s.ft. valued at $ 40,950	.do.
6.	Dust Shield (leather)		3,150	9,954	13,104	31	$ 44,730	.do.
7.	Sheep skin tannery	300 skins per day	5,071	3,080	8,151	10	$ 75,600	.do.
8.	Suede garment leather		11,371	63,787	75,158	45	75,000 s.ft. valued at $275,625	.do.
9.	Leather goods	600 suitcases (24") 720 suitcases (16") 1800 handbags 1200 doz. purses 7200 holdalls	3,570	4,380	7,950	21	$ 18,370	.do.

No.	Scheme	Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
10.	Ammunition boots	2400 prs. per month	9,975	20,473	30,448	3	$ 91,445	Rented building
11.	Glue	150 tons per annum	26,380	12,180	39,060	25	$ 57,330	Own building
12.	Bicycle leather Saddle tops	200 tops per day	6,300	7,694	13,994	15	$ 38,155	Rented building
13.	Shoes		10,920	21,294	32,214	44	22,500 prs. per year valued at $118,125	.do.

INDUSTRIES BASED ON MINERAL RESOURCES

No.	Scheme	Fixed capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1.	Fireclay bricks Ceramics	6000 tons per year	30,303	16,895	47,198	52	6000 tons valued at $81,900 per year	Own building
2.	Common crockery and low tension insulators		32,736	4,880	37,616	37	Cup and saucers. Decorated wares 6000 dozen. 1st qlty.12000 doz. 2nd " 15000 " 3rd " 4500 " Insulators:egg ins 3000 gross. Fuse cut out 2000 gross. Reel insulators 3000 gross. All worth about $30,372	.do.
3.	Transfer decorations, gold lining and enamel painting on crockery articles		2,646	1,425	4,071	10	10 800 sets value of work done $2,772	Rented factory Plain crockery to be obtained from other sources
4.	Chalk crayons		987	672	1,659	12	900 cases of 100 boxes each (144 articles per box) valued at $9,450.	Rented building

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$	No. of Workers	Annual Production	Remarks
ENGINEERING								
	Auto Industries							
1.	Auto spares, (liners and pistons)	900 tons per annum	16,800	20,160	36,960	38	$90,720 worth of production	Rented building
2.	Autom. silencers	3600 silencers of various sizes	3,948	3,675	7,623	16	$16,380	.do.
3.	Oil seals	2,700,000 pieces of oil seals per annum	9,513	8,911	14,424	17	2,700,000 pieces valued at $40,425 per year	.do.

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$	No. of workers	Annual Production	Remarks
1.	2.	3.	4.	5.	6.	7.	8.	9.
	LIGHT ENGINEERING							
1.	Agricultural implements	4.5 tons per month of assorted types	8,190	4,118	12,308	31	29,211	Rented building
2.	Bicycle Hubs	200 pairs of hubs per 8 hr shift day.	33,711	47,335	81,046	43	60,000 pairs valued at 56,700	.do.
3.	Bicycle handles	60,000 per year	14,070	10,599	24,669	24	60,000 handles valued at about 56,700	.do.
4.	Bicycle brake parts	30,000 sets	8,939	5,033	13,972	19	30,000 pairs valued at about 26,775	.do.
5.	Bicycle Bells	1,250 doz. bells per month	11,256	8,649	19,905	32	15,000 doz. bells per annum valued at about 42,840	.do.
6.	Bicycle mudguards	2,000 pieces per day	7,560	27,745	35,305	42	600,000 pieces valued at about 213,335	.do.
7.	Bicycle forks	450 pieces / 8 hours shift day	4,221	16,860	21,081	29	135,000 pieces valued at about 70,875	.do.

1.	2.	3.	4.	5.	6.	7.	8.	9.
8.	Bicycle Free wheels	500 free wheels per day	42,630	11,812	54,442	45	150,000 pieces per year valued at $63,000	Building rented
9.	Bicycle Bottom fittings	2 gross sets per day	12,726	7,087	20,813	20	600 gross sets per year valued at about $31,752.	.do.
10.	Central Painting & enamelling unit	36,000 cycles per year	10,227	7,060	17,287	21	36,000 cycles painted at a value of US$37,800	.do.
11	Brass Lamp holders	7500 doz.per month	13,155	14,760	27,915	40	90,000 doz.holders valued at about $75,600	.do.
12.	Blacksmithy tools	about 50 sets per month	18,270	7,370	25,640	24	About 68,520 lbs. of carbon steel and 14,400 lbs.of mild steel articles valued at about $93,240 per year	.do.
13.	Bottle-cleaning twisted in wire brushes		3,520	7,170	10,690	11	$35,280 worth of brushes a year	.do.
14.	Cutlery		14,700	6,930	21,630	47	45,000 knives, 45,000 scissors all valued at $29,327	.do.
15.	Pressure die casting of non-ferrous alloys		18,900	7,271	26,171	19	33 tons valued at $34,928 per year.	.do.
16.	Cast iron soil pipes		7,812	30,795	38,607	53	1,680 tons valued at $146,412	.do.
17.	Cast iron foundry	900 tons per year	8,295	18,343	26,638	44	900 tons at $85,050	.do.

1.	2.	3.	4.	5.	6.	7.	8.	9.
18.	Cast iron metric weights	900 tons per year	4,998	14,724	19,722	38	900 tons valued at ₹67,095	Rented factory
19.	Fountain pen nibs		7,140	8,200	15,340	32	900,000 nibs valued at ₹39,690	.do.
20	Non-ferrous metric weights		10,710	27,563	38,273	41	114 tons valued ₹128,702	.do.
21.	Hand tools	5000 sets spanners per month	54,600	12,366	66,966	44	₹69,300	.do.
22,	Hand pumps	4500 units per year	7,875	7,664	15,539	17	₹28,173	.do.
23.	Hospital equipment		9,990	45,986	55,976	25	₹205,518	.do.
24.	Grease nipples	40,000 nipples per month	7,455	2,520	7,975	21	₹13,860	Rented building
25.	Metal labels by photo anodising process	1,80,000 pieces of 2" x 2" per month	2,520	4,983	7,503	14	₹22,680	..do.
26.	Padlocks	15,000 pieces per month	16,380	9,355	25,735	49	₹49,620	.do.
27.	Metal cutting hacksaw blades	125 gross per day	13,650	16,800	30,450	20	₹86,625	.do.
28.	Tripod stands for cameras and other optical instruments	1200 pieces per month	17,640	5,155	22,795	26	₹30,602	.do.

1.	2.	3.	4.	5.	6.	7.	8.	9.
29.	Mild steel split cotter pins	5000 gross per month	10,080	4,466	14,546	11	23,345	Rented building
30.	Pressure Gauges	18,000 pieces per year	29,169	20,617	40,786	35	107,100	.do.
31.	Pruning knives	12,000 pieces per month	7,000	6,300	13,300	30	230,240	.do.
32.	Loudspeakers (Radios)	1500 pieces per month	16,665	87,154	103,819	18	252,500	.do.
33.	Radio chassis	1500 pieces per month	4,284	1,764	6,048	18	210,231	.do.
34.	Assembly of transistor radios	100 sets per month	6,405	11,592	17,997	21	363,000	.do.
35.	Rivets	4100 lbs.assorted per month	26,250	22,176	48,426	37	103,320	.do.
36.	Springs	-	20,370	8,820	29,190	7	52,500	.do.
37.	Spring washer	40,000 lbs. per month	14,280	6,720	21,000	18	126,000	.do.
38.	Double ended spanners	3,750 sets of 12 pieces each per year	88,410	57,298	145,708	54	294,000	.do.
39.	Carpentery tools		29,862	17,351	47,213	36	91,093	.do.
40.	Drawing instruments		20,328	6,300	26,628	25	3600 sets valued at $124,740	.do.

1.	2.	3.	4.	5.	6.	7.	8.	9.
41.	Steel furniture	50 Chairs per day	7,350	8,854	16,204	26	$ 39,375	ted Building
42.	Water meter	500 pieces per month	30,345	17,430	47,775	27	394,500	Rented building
43.	Panel pins and wire nails	114 tons per year	46,110	6,720	11,331	7	32,306	.do.
44.	Staple pins	144,000 boxes each of 1000 Nos. per year	7,140	2,730	9,870	9	15,120	.do.
45.	Barbed wire	520 tons per year	4,410	26,250	30,660	17	109,418	.do.
46.	Jobbing workshop	-	22,670	6,688	29,358	36	-	.do.
47	Safety razors	500 pieces per day	11,193	6,218	17,411	17	56,700	.do.
48.	Safety pins	55,000 pieces per day	9,240	4,334	9,574	50	21,656	.do.
49.	Wood screws	3750 gross per month	11,130	2,400	13,530	14	45,864	.do.
50.	Machine screws	2600 gross per month	15,015	9,135	24,150	17	45,864	.do.
51.	Sheet Metal Tins	200 tins per day/shift of 4 gallons capacity	8,400	16,823	25,223	23	230,580	.do.

1	2	3	4	5	6	7	8	9
52.	Tin cans (5 gallon capacity)	400 drums per day	7,980	16,758	24,738	20	76,10[illegible]	Routed building
53.	Galvanised iron buckets	1200 doz. per month	6,300	14,893	21,193	20	72,576	.do.
54.	Rolling shutter	5000 sq.ft. per month	12,096	7,864	19,960	31	$ 37,800	.do.
55.	Galvanized ice cans	1000 cans per month	11,340	27,137	38,477	19	$ 126,000	.do.
56.	Shoe tacks	2000 lbs. per month	10,500	1,260	11,760	8	$ 12,600	.do.
57.	Conduit pipes	1500 ft.per day	7,077	6,930	14,007	21	$ 33,075	.do.
58.	Shoe eyelets	1125 boxes of 1000 pieces per month	3,570	1,593	5,163	8	$ 29,505	.do.

No.	Scheme	Capacity	Fixed Capital U.S.$	Working Capital U.S.$	Total Capital US.$	No. of Workers	Annual Production	Remarks
1.	2.	3.	4.	5.	6.	7.	8.	9.
Electrical Engineering								
1.	Electrical accessories: Switches, Ceiling roses Plugs and Sockets		14,385	4,259	18,644	23	24,000 doz.articles valued $20,664	Rented factory
2.	Call-bells and buzzers		9,072	4,647	13,719	16	48,000 pieces valued $24,948	.do.
3.	Fluorescent tube lights and festoon bulbs		21,767	25,994	47,761	28	240,000 tubes valued at $155,610	.do.
4.	Casing, caping and other electrical accessories		599	1,386	1,985	4	90,000 ft.of casing & capings, 300 doz. metre & fuse boxes, 45,000 round blocks valued at $6,250.	.do.
5.	Assembly of fluorescent lamp starters	300,000 starters per year	3,864	10,140	14,004	11	Value of production $44,888	.do.
6.	Domestic electrical appliances		17,046	16,889	33,935	47	7,200 soldering irons 6,000 electric stores	.do. enamelling, electroplating and manufactured ceramic parts to be produced from other units.

1.	2.	3.	4.	5.	6.	7.	8.	9.
7.	Tin-joint clips		945	2,292	3,237	2	324,000 boxes valued ₹12,248	
8.	Heating elements	10,000 per month	698	3,355	4,053	10	120,000 pieces valued at ₹ 18,900	Rented factory
9.	Tubular heating elements, cooking plates, hot air circulators and desert cookers		76,217	130,033	206,250	106	60,000 pieces of tubular heating elements 60,000 cooking plates 60,000 hot air circulators, 1,440 desert cookers, 6,000 mixers valued at ₹763,560	Rented building
10.	Mixers and juice extracting attachments		14,532	87,734	102,266	22	6,000 mixers, 6000 juice extracting attachments valued at ₹504,000	Rented factory - Motors, plastic mouldings, glass bulbs switches etc. to be procured from outside
11.	Fractional horse power motors		21,318	19,045	40,363	32	1,440($\frac{1}{2}$ hp)3,000 (50 watts shaded pole type)3,000 (50 watts universal type) valued at ₹123,732	Rented building
12.	Small fractional horse power motors ranging from 10 to 200 watts.	500 motors of 10 to 150 watts capacity p.m.	9,996	7,560	17,556	22	6000 motors valued at ₹63,000	Rented factory

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1.	2.	3.	4.	5.	6.	7.	8.	9.
13.	Automatic electric irons	17,300	19,977	37,277	44	12,000 automatic irons and 12,000 steam irons valued at $113,400	Rented factory
14.	Small transformers and chokes	6,300	12,848	19,148	20	18,000 chokes 18,000 output transformers, 6000 main transformers. $48,510	.do.
15.	Star Delta starters and metal clad switches	14,373	16,789	31,162	38	3,600 starters and 450 metal-clad switches valued at $90,300.	.do.
16.	Combined switch fuses (iron-clad)	26,733	23,909	50,642	51	15,000 switch fuses	.do.
17.	Electric motors	65,213	30,450	95,663	61	2,100 motors(5hp) valued about about $176,400	.do.
18.	Neon and glowsigns	4,563	9,708	14,271	8	$22,680 worth of work	.do.
19.	Ten cyle electrical potential tester	1,617	2,256	3,873	6	1,200 doz. valued $10,584	.do.

1.	2.	3.	4.	5.	6.	7.	8.	9.
20.	A.C. Electricity (single phase and 3-phase kw)meters		77,469	22,680	100,149	52	4000 Nos.3-phase 10 amps type 5000 Nos.single phase 10 amps type.6000 Nos.single phase 5 amps type valued @ ,128,100.	Rented building
21.	Electric Razors	2400 per month	40,587	29,654	70,241	48	28,800 pieces valued at ,362,880	.do. Foreign Collaboration preferred
22.	Power transformers up to 50 k.v.a.		66,465	65,420	131,885	42	300 transformers of 15 kva 400 transformers of 25 kva 200 transformers of 50 kva Total value 869,600	Rented building
23.	Electric handtools	2400 tools per month	103,430	23,530	126,960	88	28,800 tools valued at 462,840	.do.
24.	Miniature lamps	50,000 pieces per month	2,310	4,403	6,713	20	600,000 pieces per year valued 15,120	.d Rented Factory

PAPER AND PAPER-BASED INDUSTRIES

No.	Scheme	Fixed capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1.	Drawing and filter paper	2 reams drawing paper and 3 reams filter paper per day	22,785	7,818	30,603	50	$ 46,305	Rented building
2.	Paper	2 tons per day	59,850	44,100	103,950	91	$207,900	.do.
3.	Strawboard	1 ton per day of 2 shifts	30,240	6,300	36,540	50	$ 36,750	.do.
4.	Strawboard	2 tons per day of 3 shifts	53,550	12,600	66,150	69	$ 84,000	.do.
5.	Paper cartons	100,000 (4 ounce capacity) per month	10,080	10,442	20,522	16	$ 50,400	.do.
6.	Corrugated paper	5000 sheets per day	10,500	48,888	59,388	16	$252,000	.do.
7.	Waterproof packing paper (bituminised)	40 rolls of 100 yds. per shift	7,140	13,429	20,569	14	$ 57,960	.do.
8.	Paper napkins	240,000 boxes each of 100 napkins per year	14,700	28,350	43,050	15	$151,200	.do.
9.	Exercise Books		5,040	7,015	12,055	18	$ 30,812	.do.

TEXTILES

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$.	No. of Workers	Annual Production	Remarks
1.	Braided shoe laces and cords	4200 gross of laces per year	1,082	1,190	2,272	9	$35,367	Rented Building
2.	Reeled sewing thread	230 gross tubes per month of 100 yds.each	1,050	5,134	6,184	5	$22,066	.do.
3.	Umbrella Assembly	3000 per month	420	7,623	8,043	14	$32,130	.do.

BUILDING MATERIALS

No.	Scheme	Fixed Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1.	Aluminium hinges and tower bolts	7200 doz. hinges 7200 doz. tower bolts 8400 doz. socket bolts	13,272	21,270	34,542	29	$ 96,810	Rented building
2.	Brass cocks	5000 cocks per month of ½"	5,796	5,084	10,880	24	$ 26,670	.do.
3.	Reinforced cement concrete spun pipes	40,500 cu.ft. per year	15,645	10,975	26,620	31	$ 51,030	Own building
4.	Standard doors and windows		10,941	8,260	19,201	35	1200 each doors and windows of 25 sq.ct. valued at $ 44,100	Rented building
5.	Concrete grills		1,680	3,058	4,738	10	144,000sq. ft. valued @ $13,508	.do.
6.	Ceramics - Sanitary wares and electrical low tension insulators	240 tons sanitary ware 60 tons electrical goods per year	38,220	8,910	47,130	55	Sanitary wares valued @ $42,840 electrical goods valued @ $11,340	Own building
7.	Clay roofing tiles	1 million per annum	35,180	6,430	41,610	50	$36,225	1. Own building 2. Clays require testing

No.	Scheme	Fixed Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
8.	Mosaic floor tiles		7,224	7,407	14,631	26	36,200	Rented building
9.	Table moulded building bricks	450,000 bricks per month gross	15,120	7,350	22,470	93	4.86 million saleable	Own building

CHEMICALS

No.	Scheme	Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1	Boots Polish	500 tins per day of one shift	714	2,625	3,339	3	150,000 tins valued at $ 12,500	Rented Building
2	Chrome pigments		8,148	10,920	19,068	19	60 tons of primrose chrome pigment valued @ $ 50,400	.do.
3.	Copper sulphate	1 ton per day	10,710	20,160	30,870	27	300 tons per year valued @ $ 94,500	Production from scrap metal - rented building
4.	Azo dyes	8000 lbs per month	8,169			11		Rented building
5.	Epsom salt	500 kg. per day	3,192	2,022	5,214	9	$ 9,450	.do.
6.	Fireworks		38,898	96,600	135,498	38	$ 19,450	Own building
7.	Ink		840	1,796	2,636	7	7,642	Rented building
8.	Insecticides formulations	122 tons per month	27,678	26,335	53,013	22	$110,880	.do.
9.	Indigosol	650 lbs.per month (indanthren black)	7,350	39,154	46,504	11	$167,076	.do.

No.	Scheme	Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
10.	Liquor ammonia	200 lbs. per day	5,670	2,352	8,022	9	$ 10,584	Rented building
11.	Optical whitening agents	2500 lbs. per month	7,350	18,585	25,935	8	$ 81,900	.do.
12.	Phenyl, DDT, dusting powder and spray		259	2,697	2,956	6	$ 11,403	.do.
13.	Plaster of Paris for surgical use	11 tons per month	2,415	1,349	3,764	11	$ 8,316	.do.
14.	Potassium permanganate	500 lbs. per day	10,500	14,700	25,200	15	$ 63,000	.do.
15.	Paints and varnishes	3 tons per day	21,000	126,000	147,000	50	$567,000	.do.
16.	Printing ink	8000 kg. per month	23,520	17,293	40,813	20	$105,840	.do.

RUBBER BASED INDUSTRIES

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$	No. of Workers	Annual Production	Remarks
1.	Rubber-moulded goods	1800 doz.sets	9,450	4,740	14,190		$24,948	Rented building
2.	Sponge-rubber sandals	6000 pairs per month	12,810	10,920	23,730	20	$65,520	.do.
3.	Dipped goods from latex		1,142	1,407	2,549	7	$ 6,887	.do.
4.	Rubber foam	1000 cushions per month	23,730	8,673	32,403	65	$45,360	.do.
5.	Bicycle tyres and tubes	3,750 tyres and tubes per month	73,500	28,665	102,165	115	45,000 tyres and tubes valued at $160,660	.do.

PLASTICS

No.	Scheme	Capacity	Fixed Capital US dollars	Working Capital US dollars	Total Capital US dollars	No. of Workers	Annual Production	Remarks
1.	Articles from perspex sheets	4300 pieces per month	2,835	5,048	8,883	10	$ 27,090	Rented building
2.	Acrilic buttons	1000 gross per day	5,365	6,300	11,665	28	$ 63,000	.do.
3.	Plastic cane (filament)	2100 lbs. per month	10,500	8,442	18,942	17	$ 45,360	.do.
4.	PVC flexible cords	4 million yds. per year	12,600	46,410	59,010	15	$117,600	.do.
5.	Alkathene toys Alkathene feeding bottles polystyrene bangles & polystyrene buttons		420	1,680	2,100	7	7,530	..do.
6.	Fountain pens	90 gross per month	3,234	8,400	11,634	18	$ 16,380	..do.
7.	Polythene packing material	3100 lbs.per month	6,237	6,772	13,009	14	$ 31,185	..do.
8.	Plastic raincoats	625 pieces per month	1,260	3,030	4,290	4	$ 14,175	.do.
9.	Spectacle frames	750 doz.per month	2,310	20,197	22,507	31	$ 85,050	.do.

WOOD BASED INDUSTRIES

No.	Schemes	Capacity	Fixed capital US.$	Working Capital US.$	Total Capital US.$	No. of workers	Annual Production	Remarks
1.	Modern carpentery	500 chairs 100 tables per month	6,920	5,910	12,830	27	$28,980	Rented building
2.	Pattern making shop		2,610	2,220	4,830	11	$11,382 worth of work	.do.
3.	Drawing boards and Tee squares		1,890	1,890	3,780	13	300 drawing boards (42"x30") 800 drawing boards (32"x23") 400 drawing boards (24 x 16") 300 Tee squares (43"x 43") 800 Tee squares (33" x 33") 400 Tee squares (25"x25") $9,030	
4.	Packing cases	300 cu.ft. per day	14,280	13,860	28,140	41	$63,000	.do.
5.	Precision shoe lasts	2000 pairs per month	19,950	11,970	31,920	32	$75,000	.do.
6.	Paint brushes	1040 doz. per month	6,300	20,490	26,790	33	12,480 doz. at $89,100	.do.
77.	Cork stoppers	800 gross per day	12,180	19,488	31,668	28	$58,170	
8.	Casing.caping and other electrical accessories		599	1,386	1,984	4	90,000 ft.of casing and capings, 300 doz.meter & fuse boxes; 45,000 round blocks valued at $6,250	.do.

INDUSTRIES BASED ON MINERAL RESOURCES

Glass

No.	Scheme	Capacity	Fixed Capital US.	Working Capital US.	Total Capital US.	No. of Workers	Annual Production	Remarks
1	2	3	4	5	6	7	8	9
1	Glass wool	150 kg. per day	10,500	2,772	13,272	10	45000 kg. valued at 18900	Rented Building
2	Glass Ampoules	684,000 pieces per month	12,472	7,140	19,614	18	Sales proceeds 34,473	--do--
3	All glass hypodermic syringes	20,000 doz. of 5 cc	12,600	9,261	21,861	61	45,360	--do--
4	Glass beads	c	420	2,942	3,362	19	15,000 lbs. valued 1575	--do--
5	Glass toys	15 doz. per day	945	2,934	2,879	13	9,921	--do--
6	Silvering of glass		798	1,937	2,735	3	48,000	--do--
7	Vacuum flasks	300 flasks per day	11,550	21,000	32,550	30	8500 doz. valued 78,750	--do--
8	Decorated glassware		2,730	7,115	9,845	6	35,682	--do--
9	Glass bottles	4 tons a day	14,700	21,609	36,309	107	100,800 worth of bottles	--do--
10	Interchangeable ground glass joints		2,835	2,142	4,977	7	100 gross pieces 10,886	--do--
11	Glass Phial		1,260	2,100	3,360	19	8820	--do--
12	Scientific glass apparatus		7,350	2,100	9,450	12	10080	--do--
13	Lenses from glass blanks	240 doz. pairs per month	10,500	4,725	15,225	19	29,300	--do--

No.	Scheme	Capacity	Fixed Capital US.$	Working Capital US.$	Total Capital US.$	No. of Workers	Annual Production	Remarks
14	Rough blanks for lenses	12,500 doz. pairs per month	19,950	12,600	32,550	32	$47,244	Rented Building
15	Thermometers		6,720	6,037	12,307	25	$31,185	--do--